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Please forward changes of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda, Maryland 20014, giving full name, rank, corps, and old and new addresses.

The issuance of this publication approved by the Secretary of the Navy on 4 May 1964.

The Changing Status of Tinea Capitis

By E. Richard Harrell, Jr., MD, Department of Dermatology, University of Michigan, Ann Arbor. University of Michigan Medical Center Journal* 30(1): 21, January-February 1964.

Few diseases have undergone the revolutionary change in therapy that has occurred with ringworm of the scalp (tinea capitis) since the advent of the antifungal antibiotic, griseofulvin. Cure of this type of fungus infection can now be accomplished by the simple oral administration of griseofulvin, whereas previously, extensive topical therapy and, at times, an epilating dose of x-ray therapy were required to effect a cure.¹⁻³ The vast reservoir of obvious cases of tinea capitis has been largely eradicated by the widespread use of griseofulvin. New fungi, causing different forms of tinea capitis, are gradually appearing, and making it necessary at this time to reassess the problem of diagnosis and treatment.

Diagnosis. The term tinea capitis implies infection with one of many dermatophytes or ringworm fungi of the genera Microsporum, Trichophyton, or Epidermophyton. Since the early 1900's the fungus most often isolated from human scalp infection has been Microsporum audouini. This organism was apparently brought to the eastern seaports of the United States from England and has since spread through all the major population centers of this country by direct human transmission. M. audouini causes infection among siblings and also epidemics of scalp ringworm in school children.

This organism first invades the hair follicles of the scalp and produces a sheath of small spores which surrounds the involved hairs. These hairs become brittle and break off soon after their emergence from the follicular orifice. This produces what appears to be an area of true alopecia. Upon close examination, however, a fine stubble of broken hair can be seen which differentiates this problem from that of alopecia areata in which the hair undergoes complete effluvium. The area of involvement is usually devoid of inflammatory reaction. The spores produce an intense blue-green fluorescence when viewed in a dark room under Wood's light illumination. For this reason, the Wood's light has come into widespread use in the identification of tinea capitis, and false reliance has come to be placed upon this examination. Far too few physicians appreciate that many other fungi capable of causing tinea capitis do not fluoresce under the Wood's lamp.

During the past decade there has been a great increase in the number of cases of scalp infection caused by Trichophyton tonsurans. Infections caused by this fungus were rare in the midwestern United States prior to 1950, although there was a well known focus in the Southwest and in Mexico. It has since gained a strong foothold in the Midwest by direct man-to-man transmission from workers who migrated here from the endemic area to help in the harvesting of fruit and vegetable crops. Examination of a segment of the school population of Wayne County, Michigan, indicates that there is a

* Formerly The University of Michigan Medical Bulletin.

surprisingly high percentage of T. tonsurans infection present.⁴ T. tonsurans, unlike M. audouini, does not fluoresce under the Wood's light, for the spores of this organism, instead of surrounding the hair with a sheath of spores, invade the hair shaft and are found in an endothrix position. Also, hair involved with this fungus is less likely to break off in a uniform fashion, and the infection is thus more subtle in its clinical characteristics. An inflammatory reaction, or kerion, is more apt to result from this type of hair infection than from M. audouini. Patients have also been seen with a scarring form of alopecia reminiscent of the cutaneous form of lupus erythematosus. Because of the varied clinical nature of such infections and a lack of Wood's light fluorescence, microscopic examination of infected hairs is essential.

Other ringworm fungi which invade the human scalp hair follicle are usually acquired by animal, rather than by human, contact. These infections are also nonfluorescent when examined under Wood's light with the exception of those caused by Microsporum canis. This organism, as well as Trichophyton mentagrophytes and Trichophyton verrucosum, commonly produces a profound inflammatory response which is granulomatous in nature. This reaction represents the host's effort to expel the infected hair, and, as such, is a desirable phenomenon. However, the kerion reaction may be so intense that the entire hair follicle is permanently destroyed, thus producing an area of permanent alopecia. If this appears likely, vigorous therapeutic steps should be taken to reduce the inflammation.

Therapy. Noninflammatory Tinea Capitis. Prior to the advent of griseofulvin, the central problem in the treatment of noninflammatory tinea capitis was the unavailability of fungicidal or fungistatic medications which could be forced into the depth of the infected hair follicle. Ectothrix spores outside the follicular orifice could be eliminated by topical measures, but the base of the hair remained infected. Those fungi that produce endothrix infection were almost totally resistant to topical measures. T. tonsurans infections were considered virtually incurable by any method short of x-ray epilation, and even following this procedure there was a high rate of recurrence.

Griseofulvin has now almost completely replaced older methods of treating noninflammatory tinea capitis. Such an infection is now simply managed by the oral administration of 250 mg of griseofulvin per day for six consecutive weeks. No topical (ointment) medication is necessary. Griseofulvin should be administered with or following a meal containing fat, since its removal from the gastrointestinal tract is intimately connected with fat absorption. Ignorance of this fact helps to explain some of the recorded instances of griseofulvin-resistant tinea capitis. The drug is exceedingly well tolerated and has a low incidence of sensitivity reactions even though it is derived from species of Penicillium. There is no cross sensitivity with penicillin. If daily administration of the drug is impractical, as in the treatment of a large number of children in an institution, then a large "one shot" dose can be used. Two grams of griseofulvin given in a single dose in such a situation will produce cure in a high percentage of the children. Any failure resulting from such a single treatment can be individually retreated with the long term dosage method.

Inflammatory Tinea Capitis. The most common error made in the treatment of angry-appearing, inflammatory fungus infections of the scalp is the use of vigorous topical therapy. Indeed, no form of topical antifungal therapy is indicated in the treatment of a kerion reaction! The already inflamed skin and subcutaneous tissue cannot withstand further insult by strong chemical agents without producing even greater inflammation. Manual epilation of infected hairs is the most important step in management. These hairs are invariably resting in a purulent pocket and can be painlessly removed with forceps. This procedure should be carried out daily until all the involved hairs have been removed. Wet compresses of normal saline solution help to reduce the inflammation. If there is evidence of secondary bacterial infection, systemic as well as topical antibiotics should be administered. The inflammatory reaction may also be reduced with topical corticosteroids in a cream or lotion combined with a topical antibiotic. Occasionally a patient's reaction may be so severe that permanent hair loss would result from scarring unless a short "burst" of oral corticosteroids is given (for example 10 to 20 mg of prednisone per day for a period of 3 to 4 days). The administration of griseofulvin is probably unnecessary in the management of inflammatory forms of tinea capitis, since the response to the infection itself assures that the disease is self-limited and self-healing.

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In 1913 there were only 23,000 physicians in Russia. In 1961, the USSR had some 420,000 physicians to meet the needs of a population of 220 million. At present, about 30,000 new doctors graduate every year, but more are needed to keep up with net annual population increase of 3.6 million and changes in the pattern of medical care. Facilities for undergraduate medical education in the USSR are accordingly being expanded.

—WHO Chronicle 18(5): 154, May 1964.

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The Management of Chronic Pain -
The Anesthesiologists' Role

By LT Homer L. Dixon MC USN*. From the Proceedings of the Monthly Staff Conferences of the U. S. Naval Hospital, NNMC, Bethesda, Md. 1963-1964.

The Nature of Pain. Pain has two sites of origin: central pain, such as the painful aura of epileptiform seizures and conversion pain of hysteria (these are both rare forms of pain), and peripheral pain, the much more common and what the author will be concerned with in this article. The perception of peripheral pain is a very simple receptive and conductive mechanism from somatic and visceral nerve endings, but the reaction to the pain once it reaches the central stimuli areas is very complex, which is altered in the same person at different times, depending on the person and his environment at the time he experiences the pain. Thus, in the reaction to pain the most important aspect is an awareness by the patient that the pain itself exists.

The Role of the Anesthesiologist. By far the most common role the anesthesiologist plays in chronic pain management is to provide special technical aid by performing diagnostic, prognostic and therapeutic blocks. Occasionally, however, the anesthesiologist will be responsible, as the physician of the patient, for the overall management of the patient and the problem. The special technical aid of diagnostic and therapeutic blocks is often best handled by the anesthesiologist, since in his surgical anesthesia practice, he should have exceptional skill and dexterity with nerve block procedures. Although this does not guarantee him equally good success in pain problems, it at least is a great help to him. His everyday use of analgesics and sedatives makes him more acutely aware of the limitations, disadvantages and complications resulting from their use. In daily practice the anesthesiologist sees and cares for patients who fear pain and consequently, he is one of many sympathetic and understanding people to whom the patient can look for sympathy and understanding of their pain problem. The agents used in management of chronic pain are two types: 1. Local anesthetics, e. g., procaine, xylocaine, pontocaine, carbocaine, all are examples of these agents. Their individual properties such as fast onset and great penetration of xylocaine and carbocaine; the poor penetration and short duration of procaine; and the poor penetration, slow onset, but long duration of pontocaine are what determine which agents will be used. These agents are used as mentioned for diagnosis, prognosis of later surgery, and rarely as prophylaxis as in impending dystrophy. 2. Neurolytic agents, such as phenol and alcohol, which are only rarely used to control severe intractable pain in patients when neurosurgical interruption is not feasible, or in patients who refuse operation.

Pain Syndromes. The first class is the group of neuralgias, such as trigeminal neuralgia. Local anesthetics are used for diagnosis, prognosis,

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and to let the patient know how they will feel once the nerve has been sectioned by surgery. For occipital neuralgia, the same role is used for diagnosis and prognosis. However, in segmental neuralgias, such as severe herpes zoster, occasionally intermittent blocks of local anesthetics or continuous peridural anesthetics may be of benefit to get the patient through the severe acute stages of this disease, thus being used as therapy. In intractable radiculalgias, diagnosis and prognosis should be the role for the anesthesiologist in performing blocks on these nerves.

The second class of pain syndromes, the causalgias, are divided into two groups: 1. The major causalgias in the first group, which occur when there is incomplete severance of a large nerve, such as the sciatic or femoral nerve of the leg. This is actually much more common in military medicine where severe injuries are more frequently found. This is an area where anesthesiologists can be of great value. These people experience, acute, severe burning pain in the area, with hyperalgesia, vaso-motor disturbances, vasal spasm, and coolness of the area. Continuous or intermittent sympathetic blocks of these areas offer great relief and are thereby a therapeutic measure as well as a diagnostic and a prognostic procedure. If done in the acute stage; that is, before secondary hyper-sympathetic activity changes could occur within two or three days. 2. Minor causalgias, in the second group, are those that may occur in shoulder-hand syndrome with only mild irritation of various nerves. And for this group, sympathetic blockades, usually intermittent, are of good diagnostic, prognostic, and therapeutic value. In the amputation stump-pain syndrome, repeated local injections will only occasionally relieve the patient for any period of time; and, by far, the best treatment of choice is cordotomy. For such things as tendonitis and bursitis, every physician is aware of the hydrocortisone and local anesthetic injection used and most physicians have done this. This can often be of great value in the relief of pain of a fairly permanent duration.

The malignant growth pain, either from direct extension or metastatic spread, is poorly treated with any local anesthetics or neurolytic agents. It is for diagnosis and prognosis only. All palliative procedures, such as bypass operations in gastrointestinal tract neoplasms, radiation therapy, castration, endocrine therapy, nitrogen mustard therapy, radioactive materials, bilateral adrenalectomy which will temporarily relieve this pain must be tried before any agents such as narcotics, nerve blocks, and/or surgery are tried. Then, only if the patient is in such poor condition that surgery is not feasible, or if the patient will not agree to surgery, should any attempt at blocking of these nerves be tried.

In a peripheral vascular disorder, continuous sympathectomy with local anesthetics in the very early stages, before thrombosis can develop in the collateral circulation, is a definite benefit. This should be done within the first few hours and is of little or no benefit after a day has passed. If done early, this procedure will relieve the hypersympathetic activity resulting in vasospasm and will thus keep the collateral vessel open, preventing it from becoming hypoxic and thrombotic. Only in chronic vascular diseases such as

Raynaud's disease, thromboangiitis obliterans and arteriosclerosis obliterans, can diagnosis and prognosis be done well with chemical sympathectomy by the anesthesiology department. Needless to say, no treatment is of a long-lasting value, but complete surgical sympathectomy is the optimal choice at the moment.

In visceral disorders, particularly of the head and neck, sympathetic blockade is rarely of any benefit for such things as cerebral vascular accidents. In patients who have residual effects from their cerebral vascular accidents, it is extremely doubtful if any benefit can be expected, except on a psychotherapeutic level. With methods available now for anesthesia management during surgery, the patients with severe intractable angina pectoris are best treated by surgical methods with interruption of the sympathetic chain in the thoracic area. In extremely critical patients, in whom there is severe cardiac decompensation or other problems which make surgery impossible, continuous sympathectomy, peridural block, or less likely alcohol block of the paravertebral sympathetic chain, may be useful. One area where anesthesiologists can be of considerable benefit is in the care of the patient with acute pancreatitis. This is again within the first day. Continuous peridural block with dilute solutions of local anesthetics will relieve the pain, vasospasm and resulting hypoxia of the pancreatic tissue and thus will assist the patient recovering from the attack.

In summary then, the author feels that the anesthesiologist does have a definite role in the management of pain problems. Certainly in the diagnosis and prognosis of nearly all pain syndromes, they can be of great value to the physicians as well as to the patient, and in many acute pain problems such as the author has mentioned, anesthesiologists can employ procedures of great therapeutic benefit to the patient. Whereas, in chronic pain syndromes, surgical interruption of the nerve fibers involved is nearly always the treatment of choice in the modern practice of surgery and anesthesiology.

* * * * *

Nutritional Disease and The Eye*

By Donald S. McLaren MD, PhD, Borden's "Review of Nutrition Research," 25(1): 1-11, January-March 1964.

The B Complex Vitamins

Anterior segment of the Eye

Animal Experiments. In the experimental animal a variety of ocular lesions has been induced by isolated deficiency of most members of this group of vitamins. "Spectacle eye," consisting of loss of fur of the eyelids in the rat and rabbit is especially associated with pyridoxine deficiency. Incrustation of the lids with a dark red secretion of porphyrin from the Harderian gland inside the orbit is seen in deficiency of pantothenic acid, riboflavin, niacin, biotin, and vitamin B₁₂. Deficiency of riboflavin, pantothenic acid, pyridoxine, niacin,

* Concluded from the Medical News Letter, Vol. 43, No. 12, 19 June 1964.

and biotin have all been shown to produce vascularization and other changes in the cornea. The first experimental cataract produced by nutritional deficiency was in rats deficient in vitamins of the B complex. Subsequently other workers observed lens opacities in varying proportion of rats, and several other species deficient in riboflavin. Deficiency of several vitamins of the B complex in the diet fed to the mother rat during the gestatory period has caused congenital eye malformations in the young. Those known to cause ocular defects are riboflavin, folic acid, pantothenic acid, niacin, and vitamin B₁₂.

Disease in Man. Human nutritional deficiency disease is rarely, if ever, a manifestation of lack of a single nutrient. This is especially true of vitamins of the B complex which are usually found together in nature. Vascularization of the cornea in man and certain other ocular signs were first reported to respond to riboflavin in studies carried out in the southern United States. Subsequently many other workers reported a high incidence of circumcorneal injection and corneal vascularization in groups receiving a reasonably adequate dietary. It is now evident that this was due to misunderstanding of the normal variations in the vascular pattern of the limbic plexus. True vascularization of the cornea is an infrequent manifestation of hyporiboflavinosis in man.

A superficial keratitis in malnourished individuals, to which the name "corneal epithelial dystrophy" was given, has also been attributed to deficiency of B vitamins, especially riboflavin. It is doubtful, however, if this is a separate entity from epidemic keratoconjunctivitis of viral etiology. Similarly, claims that corneal lesions occur in pellagra, and that angular blepharoconjunctivitis responds to pyridoxine, require substantiation. An interesting syndrome, known as "shibi-gatchaki" in the area of Japan where it has been reported, includes lesions of the skin and mucous membranes suggesting pellagra and hyporiboflavinosis, as well as dim vision, photophobia and superficial diffuse keratitis.

Posterior segment of the Eye

Animal Experiments. Japanese investigators have reported various retinal lesions in deficiency of riboflavin, niacin, pantothenic acid, pyridoxine, and vitamin B₁₂. Damage to the optic pathways, resembling the changes in human nutritional amblyopia, has been produced by chronic thiamine deficiency and by combined deficiencies of thiamine and riboflavin in the rat. Finally, hemorrhagic lesions in parts of the midbrain have been reported in thiamine-deficient rats, pigeons, and monkeys. These changes closely resemble those found in Wernicke's encephalopathy.

Disease in Man. Nutritional amblyopia (nutritional retrobulbar neuropathy) as well as other conditions, such as Wernicke's encephalopathy and fundus changes, have been noted in man.

In nutritional amblyopia the symptomatology is characterized by blurring of vision for both near and distant objects, frequently accompanied by photophobia and retrobulbar pain. Visual field examination reveals central or

centrocecal scotomata with little or no peripheral contraction. Unlike the toxic amblyopias the area of field involved is confined to that served by the papillo-macular bundle and post-mortem studies confirm this. Many hundreds of cases occurred in the Far Eastern prisoner-of-war camps in World War II, leaving varying degrees of visual disability short of complete blindness. Under these conditions of special privation and also in several endemic foci, the damage to the optic nerve was but part of a generalized neuropathy. The precise etiology is still not clear, although most investigators are agreed on the role of dietary deficiency, especially of the B vitamins. The evidence for an association with beriberi has been challenged. Some cases have appeared to respond well to riboflavin, and others to vitamin B₁₂.

Wernicke's encephalopathy, due to acute thiamine deficiency, also occurred under prison camp conditions. It is also seen in the terminal stages of chronic alcoholism. Nystagmus, an oscillatory movement of the eyeballs, is invariably present and is of considerable diagnostic value as it is the earliest sign to develop. Other ocular features include external rectus fatigue and paralysis, complete disconjugate wandering, loss of visual acuity and papilledema. A similar syndrome responding dramatically to niacin has been described.

Fundus changes have been reported in infantile beriberi, and there is evidence of impairment of dark adaptation responding to riboflavin. Conflicting reports have been made concerning an association between disturbance of vitamin B₁₂ metabolism and the development of retinopathy in diabetes. Widespread retinal hemorrhages have been described in megaloblastic anemias of nutritional origin.

Other Nutrients

Vitamin C. The healing of corneal wounds is delayed in animals, and intra-orbital hemorrhage is quite frequent in human scurvy. Despite the high concentration of ascorbic acid in the normal lens, cataract is not a feature of scurvy nor do large doses of this vitamin retard the progression of opacification of the lens.

Vitamin D and Calcium. The hypoglycemia of tetany, experimentally in animals and in man, frequently results in zonular cataract. There is no direct association of this lesion with rickets. Vitamin D poisoning, and other causes of hypercalcemia also can cause deposition of calcium in many tissues, including the conjunctiva and cornea.

Vitamin E. Deficiency may produce congenital malformations of the eye in animals but is not known to be harmful to the eye in man.

Vitamin K. Hemorrhage into the retina in the newborn infant appears to be related, at least in some cases, to a vitamin K deficiency in the mother and prenatal therapy is reported to lower the incidence of the condition.

Zinc. This trace element is in relatively high concentrations in the pigmented parts of the eye. It is part of the enzyme, alcohol dehydrogenase, probably identical to retinene reductase. This may explain the defect in dark

adaptation reported in some patients with zinc deficiency secondary to liver disease.

Proteins and Amino Acids. Animal experiments have revealed a remarkable degree of resistance of the eye to harmful effects on growth, similar to that described earlier in general inanition. Prolonged protein deficiency has produced cataract in pigs and various ocular malformations in young rats resulting from maternal deprivation. Corneal vascularization has been produced in the rat by a deficiency of each of the essential amino acids and of protein. Lens opacities have been reported in rats deficient in certain amino acids, most notably tryptophane.

The ocular lesions found frequently in human protein malnutrition (kwashiorkor) are due to an accompanying deficiency of vitamin A. Protein deficiency may sometimes be indirectly involved by affecting the metabolism of vitamin A.

Carbohydrates. High concentrations of D-galactose, D-xylose, and L-arabinose result in cataracts in rats. Of metabolic, rather than dietary, origin is the cataract developing in diabetic animals and humans and in the disease galactosemia.

Lipids. Arcus of the cornea is a feature of the hypercholesterolemic state in rabbits. Arcus senilis in man also bears a relationship to raised serum cholesterol and phospholipids. Xanthelasma, the deposition of cholesterol in the peri-global tissues, is frequently associated with hypercholesterolemia and coronary heart disease. The presence of bright orange-colored plaques, possibly of cholesterol, at the bifurcation of retinal arterioles in about 10% of patients with occlusive disease within the carotid and vertebral-basilar arterial systems recently has been reported. They are indications of generalized atherosclerosis in which dietary fat may play some etiologic role.

Ingested Toxins

The ocular manifestations of toxic doses of vitamins A and D have been described. There now is good evidence for believing that amblyopia occurring in chronic alcoholics, and especially liable to develop if this is combined with excessive smoking (tobacco-alcohol amblyopia), is a secondary form of nutritional amblyopia. The pathology is identical and good results have been obtained with thiamine and more recently with vitamin B₁₂ therapy.

Contamination of cooking oil with argemone oil from a member of the poppy family has been shown to be responsible for outbreaks of epidemic dropsy among some Indian communities. Glaucoma has long been reported to be a feature of this condition but recent work casts doubt upon this.

Cataract. There is considerable evidence that senile cataract has a higher incidence and earlier age of onset among the peoples of Asia and Africa than in North America and Europe. In the experimental animal, deficiency of riboflavin, certain amino acids and protein have been shown to cause cataract.

Opacification of the lens is a long-time process. By the time visual acuity is impaired, irreversible changes have taken place. It is not surprising then that vitamin therapy applied at this stage has proved ineffective. It is possible that the cataract described in young malnourished adults in Indonesia is of nutritional origin.

Discrete Colliquative Keratopathy. Discrete colliquative keratopathy was applied by the writer to a mysterious disease of the cornea, first described in malnourished Bantu children in South Africa. The strictly localized area of corneal softening in an otherwise normal eye is difficult to explain. It is quite distinct from the generalized keratinization and softening of keratomalacia, with which it has been confused. This eye condition has been reported only among the Bantu peoples of Africa; it is unknown in other parts of the world where childhood malnutrition is rife.

Malnutrition and Trachoma. While it is true that trachoma is common among malnourished communities there is no proof that this is due to poor diet rather than to poor hygiene. The consensus of clinical opinion is that the corneal complications of trachoma progress more rapidly in the malnourished rather than the well-nourished subject but also cachectic children seem to be particularly immune to contracting infection. It may be that their conjunctivae lack certain enzyme systems essential for the virus.

Refractive errors. The refractive state of the eye appears to be very largely under genetic control. Whether environmental factors can influence refraction is not known, circumstantial evidence that they may do so is accumulating. A high incidence of myopia has been reported from a famine area in Tanganyika, although the refraction of similar tribes in other parts of the country is normal. Both premature infants and marasmic infants are more myopic than normal controls. After infants recover from the marasmus their eye refraction returns to normal, indicating a temporary disturbance in ocular dynamics rather than an effect on the growth of the eye.

It has been claimed that school children with advancing myopia eat less first class protein than those with no deterioration in their refraction and that the progress of myopia can be halted by dietary means.

Vitamin A deficiency is prevalent throughout Asia and parts of Africa and Latin America. In the most susceptible age group, the pre-school child, this dietary deficiency accounts for the major proportion of blindness and makes a considerable contribution to the high mortality. Evidence is presented of a re-awakening concern about this grave, essentially preventable, nutritional eye disease. The dangers of vitamin A toxicity are also pointed out.

Nutritional amblyopia, tobacco-alcohol amblyopia, certain encephalopathies and some diseases affecting the cornea are due to deficiency of B vitamins. All these conditions are of considerable importance in certain endemic foci and under conditions of special privation. Deficiency or excess of many other nutrients are known to produce ocular lesions under experimental conditions. Some, for example excess lipids and protein deficiency, may have a role in human eye disease but exploration of all the implications has barely begun.

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Prolonged Effect of Muscle Relaxant

By LCDR Robert C. Garrison MC USN*. From the Proceedings of the Monthly Staff Conferences of the U. S. Naval Hospital, NNMC, Bethesda, Md. 1963-1964.

The application of various paralytic drugs in modern anesthesia has contributed greatly to increased patient safety by decreasing surgical time in procedures where excess muscle tone would hinder the operation, and by virtually eliminating the need for deep anesthesia. However, as with many things, this boon has not been without its problems, chief among which is the potentiality for persistence of the neuromuscular block beyond the desired limit of surgical relaxation.

Case Report. The patient was a 39-hour old female, brought to surgery for treatment of congenital bowel obstruction. Except for the failure to pass stools, she was presumed to be a normal infant, having good color, respiration, and activity, after an unremarkable labor and delivery.

Anesthesia was begun and maintained in a standard fashion, using Halothane, nitrous oxide, and oxygen alone. Laparotomy revealed no specific obstructive lesion, with surgery consisting mainly of a visual check of the entire gut and lysis of flimsy adhesions in the cecal area. Because of moderate difficulty in replacing the bowel prior to closure, the standard reduced newborn dose of 0.3 mgm/kg of d-tubo curarine was given intravenously. This produced no noticeable effect and was repeated after 20 minutes, again without result. At this point the usual pediatric dose of 2 mgm/kg of succinylcholine was given intravenously. Relaxation immediately ensued in a typical fashion, and abdominal closure was completed without further use of relaxants.

The anesthetic agents were then discontinued and the usual maneuvers preparatory to removal of the endotracheal tube performed; but the child made no movement or effort to breathe whatsoever, despite stimulation by the suction catheter and deliberate mild hypoventilation to increase $p\text{CO}_2$.

From the injection of succinylcholine at 2230 until 2330 during which interval artificial ventilation with oxygen was performed, the child made no movements other than a curious half opening of the right eyelid with each forceable ventilation, and a rare ineffectual gasp. From 2330 to 0500, there was a progressive return to a pattern of respiratory effort, but essentially no tidal air was moved. After 0500 the volume of tidal air gradually increased until it was judged normal at 1040. At 1415 she was able to maintain her own airway and ventilate well with the endotracheal tube removed.

When any patient is noted to be slow in regaining adequate respirations after anesthesia is discontinued, several possible causes exist and need to be differentiated. Most of these are due to some combination of the sudden loss

* Staff Member of the Anesthesiology Service, USNH, Bethesda, Md.

of painful stimuli, decreased carotid body activity with low $p\text{CO}_2$ and high $p\text{O}_2$, vagal stimulation from the endotracheal tube, and residual effect of depressant drugs. These can be evaluated and corrected rather quickly by standard methods. When apnea or hypoventilation still persists, it is then presumed to be a persistent effect of any neuromuscular blocking drugs used.

The common muscle relaxants used in anesthesia are of two types, based on their relationship to the action of acetylcholine. Succinylcholine and decamethonium depolarize the motor end plate in the same fashion as acetylcholine (but of longer duration), and are called depolarizing blocking agents. Curare and curare-like drugs do not depolarize; and interfere on a mass-action basis with the depolarizing effect of acetylcholine, and are called non-depolarizing or competitive blocking agents. Because curare does act on a mass-action basis, anticholinesterase drugs such as edrophonium and neostigmine, by increasing the amount of acetylcholine left at the motor end plate, act as antidotes for prolonged effect of curare-type relaxants. Unfortunately, no such antagonists are yet available for succinylcholine.

Because this patient had received curare, edrophonium and neostigmine were given to test for the possibility of its being a reversible problem, but with no effect.

When depolarizing agents have been used over a long time during a procedure, there can be a gradual shift at the motor end plate from its depolarized condition to a non-depolarized state, but still insensitive to acetylcholine. The mechanism of this shift is as yet unexplained, but in such a case, anticholinesterases will then work to antagonize the paralysis. This was tried about three hours post-operatively, again with no result.

With the continued persistence of paralysis, despite these maneuvers, and in view of the very small amount of succinylcholine used, it was felt to be on the basis of failure of the normal mechanism for removal of succinylcholine from the body. Usually a single injection will produce paralysis for only five minutes, due to the rapid hydrolysis by plasma cholinesterase (also called pseudocholinesterase) to choline and succinylmonocholine, a very weak relaxant. When plasma cholinesterase activity is low, then succinylcholine is destroyed proportionately slowly. Cholinesterase activity is low in about 1 in 1000 patients, frequently on the basis of liver damage or immaturity. In this child, where the normal esterase activity is 80 (micro-moles of acetylcholine hydrolyzed by 1 cc of serum in 30 minutes at 37°C), the measured level was only 13, and may have been less due to margin of error at the low end of the scale. It is not too surprising then that succinylcholine action in her was prolonged 200 times the normal duration.

In one out of five primary succinylcholine apneas, the esterase activity is measured as normal by the usual method. By using dibucaine or procaine as an inhibitor in the usual test, an atypical type of serum cholinesterase has been detected, which has only a weak ability to hydrolyze succinylcholine, and occurring on a familial basis, without relation to liver problems. When this type is detected, the entire family needs to be warned, about succinylcholine as well as local anesthetics, such as procaines and dibucaine which also depend on ester hydrolysis for destruction.

Following return of normal respirations, this patient had several brief episodes of apnea, apparently in relation to small amounts of neostigmine given for its muscarinic action on the bowel. It is quite possible that there was still a subclinical residual of succinylcholine action, which acted synergistically with the nicotinic action of this weak dose of neostigmine to produce a recurrence of paralysis. Subsequent doses of neostigmine were withheld, and the child had no further paralytic or respiratory problems.

After seeming to recover well from her surgery, she was discharged from the hospital. Two days later, she developed a fulminating entero-colitis and died, apparently of endotoxin shock. Pathology did not report any findings that might suggest any other reasoning behind her apneic problem.

From the Note Book

Field Training Exercise
Camp Lejeune, North Carolina

<u>Naval Hospital</u>	<u>Surgical Team No.</u>
St. Albans	1
Philadelphia	3
Bethesda	5
Portsmouth, Va.	12

The four Surgical Teams listed above and fourteen Augmentation Personnel, from Naval Hospitals on the East Coast, participated in a Field Training Exercise during the period 3 May to 8 May at Camp Lejeune, North Carolina. CAPT H. G. Stoecklein MC USN, represented the Bureau of Medicine and Surgery and CAPT Howard Baker MC USN, participated as an observer. This exercise was planned at this time so as to coincide with the Special Purpose Exercise planned for the Secretary of the Navy, the Honorable Paul H. Nitze, Lt General Kim DuChan, Commandant of the Korean Marine Corps, General Wallace M. Greene, Jr., Commandant of the U. S. Marine Corps, and the Armed Forces Staff College members.

These mobile Surgical Teams, four of twenty, established by BuMed Instruction 6440.1B, are designed to expand the surgical capability of the operating forces of the Navy and Marine Corps under emergency conditions. They are also designed to provide surgical support and emergency treatment in disaster control measures within and outside the United States. The Augmentation Personnel, as designated by BuMed Instruction 6440.2, will serve to bring the medical units of the Fleet Marine Force up to combat strength and to insure that the medical officers assigned meet the specialist requirements as set forth in the current U. S. Marine Corps Tables of Organization.

This exercise familiarized all participants with the medical support requirements of the Fleet Marine Forces, and the capability of the Navy Medical

Corps to furnish this support. In addition, it afforded them the opportunity to familiarize themselves with the field units, the Supply Blocks, field administrative procedures and field evacuation systems. All members participated in dry net training, helicopter demonstrations, field stripping and firing of the 45 pistol, and treatment of casualties during daylight and under blackout conditions. All Surgical Team members and Augmentation Personnel were special guests for the Special Purpose Exercise conducted on 7 May. The highlights of this exercise were the viewing of the static display of the Battalion Landing Team and its equipment, the assault on a fortified position by a rifle platoon, a close air support demonstration, and an amphibious landing at Onslow Beach by a BLT. The members found the day interesting and informative and unanimously agreed that it provided them with a comprehensive view of the Marine Corps within a limited space of time.

A special demonstration of a collecting and clearing company in action was presented for the benefit of the Secretary of the Navy, the Commandant of the Marine Corps, the Commanding General of the Second Marine Division, and other visiting dignitaries. Following this special presentation, the public (civilian and military) were invited to attend. The Surgical Teams from St. Albans and Bethesda, and Augmentation Personnel participated in the demonstration. All observers were greatly impressed. General Greene, the Commandant of the Marine Corps, commented to CAPT Stoecklein that he was greatly impressed with what he saw, and wanted to know if this medical support would be available to him on call. He was assured that surgical teams and augmentation personnel would be on station within a matter of hours.

The enthusiasm, initiative, and ingenuity demonstrated by all participants during this entire training period were outstanding and deserving of the highest praise. In the critique which followed the exercise, team Captains were advised to report back to their parent Commands and continue training on the local level. Surgical Team members were urged to open, inspect and familiarize themselves with the contents of the Surgical Team blocks.

* * * * *

Worldwide Aeromedical Evacuation

The attention of Medical Department personnel is invited to the comprehensive joint regulation of the Air Force, Army, Navy, and Marine Corps—AFR 164-1, AR 40-535, OPNAVINST 4630.9B and MCO P4630.9 of 15 May 1964, bearing the above title. This regulation establishes operative and administrative responsibilities and procedures for worldwide aeromedical evacuation. It implements STANAG 3204, SOLOG 83, SEASTAG 3204, and IADB (Inter-American Defense Board) Resolution 46 by incorporating standardized aeromedical evacuation terminology and procedures which under terms of the above cited documents are binding commitments of the U. S. Government. Requests for exception should be forwarded through appropriate channels of the Service concerned.

* * * * *

MSC Training Program Moves Ahead

The following MSC officers received degrees as indicated on 7 June 1964 from George Washington University, Washington, D. C., at the Spring Convocation.

Master's Degree

LCDR R. V. L'Italien
LCDR J. C. Smout
LT C. J. Pearce
LT L. H. Webb

Duty Station

NH, Phila, (Residency Hosp. Admin)
PRNC, (DUINS, GWU)
PRNC, (DUINS, GWU)
NMS, Bethesda, Md.

Bachelor's Degree

LCDR D. Becker
LCDR H. DeGrotte
LCDR R. G. DeWitt
LT F. G. Anderson
LT L. E. Angelo
LT A. Bender
LT C. J. Dunham
LT R. B. Kessler
LT F. J. Redding
LT W. H. Schroeder
LT R. W. Tandy

NMS, Bethesda, Md.
NNMC, Bethesda, Md.
NH, Bethesda, Md.
NSHA, Bethesda (DUINS)
PRNC, (DUINS, GWU)
PRNC, (DUINS, GWU)
NH, Annapolis, Md.
NH, Quantico, Va.
NSHA, Bethesda, (DUINS)
NH, Bethesda, Md.
NNMC, Bethesda, Md.

As noted from the above, two officers received their degree upon completion of the course at the Naval School of Hospital Administration. This was possible due to their participation in the MSC training program on a part-time, off-duty basis prior to entering the class at NSHA in August 1963. Of equal importance, is the fact that many of the other officers continue their educational program on a part-time, off-duty basis since they graduated from NSHA. Such accomplishments will soon be recognized by many other MSC officers who have graduated from the Naval School of Hospital Administration since its affiliation with the George Washington University on 5 August 1960. Through this affiliation and the tremendous efforts put forth by MSC officers toward their educational program, the goal of obtaining a degree has been and will be attained.

Opportunities are available for all MSC officers to pursue their academic program under Navy sponsorship as outlined in BuMed Instructions 1520.12B and 1500.7A. Keen foresight, sufficient energy, and utilization of free time from military duties will provide the ambitious officer a sound program of self improvement that will assist him (1) to perform more efficiently; (2) to prepare himself for higher responsibilities; (3) to increase his promotion potential; (4) to maintain continuity in his academic program; and (5) to increase his employment opportunities after retirement.

—Medical Service Corps Div., BuMed.



MISCELLANY

An Open Letter From Rear Admiral E. C. Kenney
Surgeon General of the U. S. Navy to all Hospital
Corpsmen Upon the Occasion of the 66th Anniversary
of the Founding of the Hospital Corps

On the 66th anniversary of the U. S. Navy Hospital Corps, I desire to extend once again my congratulations and best wishes to all the men and women members who comprise this Corps of the Navy Medical Department.

The loyalty and devotion continuously displayed is that which has earned the Hospital Corps the respect and admiration of military and civilian personnel the world over. As I review the varied assignments required for Hospital Corps personnel I find, as in the past, a strong and dedicated support to the accomplishment of our mission. The many personal sacrifices and long hours of hard work dedicated to serve others whenever and wherever called upon serve as an individual tribute to each and every member.

On behalf of the Navy Medical Department - WELL DONE.

HAPPY BIRTHDAY

E. C. KENNEY

Spray Cans Can Be Dangerous

From The Flame XVII(5): 10-11, April 1964. Monthly publication by Cabot Industries, O. L. Fitzrandolph-Editor, 125 High Street, Boston, Mass.

Do you have an aerosol dispenser of any kind in your home? If you do, please take a few minutes to read the rest of this article; it may save you a lot of trouble.

All types of products are put up in aerosol dispensers, from paints and varnishes to whipped creams. They include bug and animal repellents, hair sprays, cleaning fluids, shaving cream, toothpaste, deodorants, polishes, airfresheners, waxes, de-icers and ether car starters. You have at least one of these in your home and probably more. They are very handy and generally do a good job, but they can also be very dangerous.

Here is the reason. When a product is put into the container, a "propellant," usually a liquefied gas, is sealed in with it. Some of the liquid gas instantly vaporizes, filling the space inside the can not occupied by the product. This vaporized gas builds a pressure inside the container so that when the valve is opened (generally a button which is depressed), it forces the product out. As the product and some of the gas are dispersed by opening the valve, more gas evaporates inside the can, keeping up the pressure.

Most home product aerosol spray cans are packed to generate 40 pounds pressure at 70° F. The cans are tested to stand pressures three to four times this amount.

Under normal conditions these containers are not dangerous. But extreme heat may build up the pressures until the can explodes like a bomb. The big danger is in disposing of the container after the product is gone. There is always more propellant, or gas, put into the container than is needed to expel the product, so that there is adequate pressure in the can to get all of the product out. That means that there is generally some of the gas left when all the product is gone.

In many cases, the supposedly empty can goes into the wastebasket and is eventually dumped in the incinerator. When the can hits the heat in the incinerator, the gas expands, bursting the can. The can may take off like a rocket or explode, spraying pieces of metal like shrapnel. There have been many cases of injury and sometimes death from this cause.

Just to keep positivistic thinking that "they can't be really dangerous" in the proper perspective, the author quotes a few incidents.

A woman in Willow Grove, Pennsylvania, tossed an empty bug-spray on a wastepaper fire and turned back toward her kitchen. There was a dull thud and a piece of the ragged metal struck her in the neck, severing the jugular vein. She was dead 15 minutes later.

A youngster spraying his Christmas tree with liquid snow, heated the can in hot water to "pep-up" the propellant. He shook the can and lost an eye and part of his lower jaw.

A fellow cleaning up his yard threw an abandoned can on his fire of burning leaves. It exploded and a piece severed an artery in his leg. He died before getting help. You can see the danger of mishandling these containers.

Also, some of the products themselves are dangerous. Many contain oil or ingredients that are flammable and may catch fire from an open flame or hot surface, causing an explosion. Paints and lacquers, some oil-type sprays, even some hair sprays, are of this type. Some are toxic to breathe for any length of time and some are poisonous if they get into your mouth or on your skin.

Most people do not take time to read instructions on things and this habit can be their undoing. So, read all instructions on aerosol containers and heed them.

Keep them away from excessive heat such as radiators or stoves. Be very careful where you spray and what you spray on. Never throw cans in wastebasket, incinerator or trash can without puncturing them. If possible, after the product has been used, bleed as much propellant from the container as you can by holding down the button. Do this in a well-ventilated area.

Then, wrap the can in newspaper and put it in the refrigerator overnight to cool. This lowers the pressure, if there is any. Next morning take the can, still wrapped in paper, turn bottom of can away from you and puncture with beer can opener. That's a lot of trouble, but at least it's safe.

American Board Certifications

American Board of Internal Medicine

LCDR Vernon N. Houk MC USN

LCDR Paul R. Minton MC USNR

LCDR William M. Soybel MC USN

LCDR Joe E. Whetsell MC USN

American Board of Otolaryngology

LCDR Hugh O. deFries MC USN

American Board of Pathology

LCDR Robert A. Burke MC USN

LCDR Robert I. Morgan MC USN

LCDR Charles J. Stahl, III, MC USN

LT Russell H. Clark, Jr., MC USNR

American Board of Surgery

LCDR Ronald E. Goelzer MC USNR

Instructional Course in Orthotics and Prosthetics
for the Orthopedic Resident

Location: U. S. Naval Hospital, Oakland, California
Dates: 28 September 1964 through 1 October 1964

This 4-day course has been established to familiarize the Orthopedic Resident with the various orthotic and prosthetic appliances available to the patient; the fitting problems that occur due to specific peculiarities of each patient; the actual fitting of the patient; the evaluation of the completed devices; the method of correct and proper prescription ordering of appliances, and the basic construction methods of the more common orthotic and prosthetic appliances.

Requests should be forwarded in accordance with BUMED INST. 1520.8 at least 4 weeks in advance of the convening date of the course. A limited number of eligible and interested officers may be provided with travel orders to attend at Navy expense. Others may be issued Authorization Orders by their Commanding Officers following confirmation by this Bureau.

—Training Branch, Professional Div., BUMED.

N-O-T-I-C-E

Personal Experience Stories of Hospital Corpsmen
Desired for Inclusion in New Book

Mrs. Eloise Engle of Falls Church, Virginia, is in the process of collecting reports of interesting personal experiences of hospital corpsmen for her new book "MEDIC." The book will cover the work of enlisted medical department personnel of all the military services. She writes:

"The problem is, as I see it, that corpsmen will not ordinarily come forward due to modesty or a feeling that someone else did something more outstanding. I need personal interviews (or reports) from corpsmen themselves who have been through World War II or the Korean Conflict, as well as important peacetime events in the Army, Navy, Marine Corps, and Air Force. I need to obtain a first-hand picture of what problems were faced and how they were handled. Also, I am interested in other experiences such as space research involving corpsmen who volunteered for tests in full pressure suits and decompression chambers; tests in diving, underwater swimming, compression chambers and submarine service; experiments in acceleration and deceleration stresses, weightlessness, and g-forces; participation in environmental studies in the extremes of heat and cold; and fallout shelter habitability and deprivation tests."

Commanding Officers, Officers-in-Charge, Senior Medical Officers, and other cognizant officials are invited to submit recommendations as to who might be suitable and willing to be interviewed by Mrs. Engle. Such information should be addressed to her at 425 Crosswoods Drive, Falls Church, Va.

— Editor

DENTAL**SECTION**Navy Expands Dental Officer Teaching Program

The Dental Division of the Navy's Bureau of Medicine and Surgery has initiated a new program to augment the continuing education provided for naval dental officers. Specialists on the staff of the U. S. Naval Dental School, Bethesda, Maryland, will tour various large naval activities throughout the United States, presenting lectures and demonstrations for naval dental officers within each



area. In this way, many dental officers who cannot attend the short postgraduate courses given at Bethesda will benefit from instruction by the school's staff in the latest developments in dentistry. Other Federal dental officers, as well as civilian dentists, will be invited to attend. RADM Frank M. Kyes, DC, USN, Assistant Chief, Bureau of Medicine and Surgery (Dentistry) and Chief of the Dental Division (seated) is shown discussing details of the tours with

members of the first two teams. They are, from left: CAPT Peter F. Fedi, DC, USN, a specialist in periodontics; CAPT Frank J. Kratochvil, DC, USN, a prosthodontist specializing in removable partial dentures; and CAPT Angus W. Grant, DC, USN, whose specialty is oral roentgenology. Activities to be visited include U. S. Naval Training Center, Great Lakes, Ill.; U. S. Naval Submarine Base, New London, Conn.; U. S. Naval Base, Newport, R. I.; U. S. Naval Air Stations at Pensacola and Jacksonville, Fla.; Marine Corps Recruit Depot, Parris Island, S. C.; U. S. Naval Station, Charleston, S. C.; and Marine Corps Base, Camp Lejeune, N. C. The Bureau of Medicine and Surgery has authorized additional tours to be scheduled during the coming fiscal year.

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Policy on Sterilization

A recent tri-service study agreed that sterilization by boiling had been proven inadequate in destroying certain organisms and therefore was not professionally acceptable to the military medical services. Thus, surgical instrument sterilizers of the boiling water type, with the exception of a few for special

application, have been deleted from the Federal Supply Catalog. This action is consonant with the information contained in Accepted Dental Remedies, 1964, which all Dental Officers are advised to consult for details. For the purpose of U. S. Navy Dental Corps policy then, sterilization is defined as the destruction of all microbial forms. This may be accomplished by steam under pressure (autoclave) or prolonged dry heat (oven). Disinfection is defined as destruction of infectious microorganisms only, and is not capable of destroying spores and certain resistant vegetative microbial forms. This may be accomplished by chemical agents (ethyl alcohol, quaternary ammonium compounds).

The Autoclave. The most reliable sterilizing agent is superheated steam under pressure. No living thing can survive ten minutes direct exposure to saturated steam at 121°C (249.8°F), which is attained under ideal conditions at sea level with 15 pounds pressure in the autoclave. However, additional time must be allowed for the items being sterilized to reach this temperature. Since it is the direct exposure to live steam (and not the pressure) which sterilizes, it is imperative that proper procedures be followed, e. g., elimination of air pockets through proper pack preparation and loading, and elimination of air from the autoclave chamber. The latter is a frequently neglected step; it may be accomplished by flushing the autoclave with steam until the thermometer in the discharge line shows that the escaping vapor is at 100°C or higher, following which the sterilizing cycle is started. With a jacketed autoclave, sterilized material can be vacuum dried in a short time.

The Oven. Recently made available in the Federal Supply Catalog under stock number 6530-962-9965, (Sterilizer, Surgical Instrument, Dry Heat Type, Electrically Heated, CRM, 11 1/2 x 6 1/2 x 5 inches, 110 volt, 60 cycle, AC, Unit: each. DMSC price \$76.00) is an excellent sterilizing oven which is especially appropriate for dental use. In the Defense Medical Materiel Board user test, the only disadvantage noted was the longer sterilizing time required, while this oven's greatest advantage was its ability to sterilize metal instruments on which it is essential to preserve cutting edges and where rust or tarnish is a factor. Its other reported advantages were no water level to maintain, thermostat adjustment easily made without opening the chamber, no pressure involved, very little heat dissipated from the sterilizer to the operating room, instruments and packs ready for immediate use after the sterilizing cycle, and no dulling or temper change of cutting instruments and blades. As with the autoclave, the operator must allow time for the instruments to reach sterilizing temperature (160-180°C, 320-355°F) before timing the sterilizing cycle. Again, care should be given to proper loading of the chamber to permit adequate hot air circulation.

Sanitization. All methods of sterilization and disinfection are impeded by the presence of debris. Numerous reports in the scientific literature illustrate the protective effect of organic debris against sterilization. Instruments must be scrubbed with brush, detergent and water, and subsequently rinsed before sterilizing. Syringe needles present a particular hazard in the difficulty of removing congealed blood from the lumen. Pre-sterilized disposable

single-use needles are recommended. When it is necessary to reuse needles, they should be cleansed by passing a wire stylet through the lumen and rinsing. Considering the poor convection of autoclave steam through the narrow lumen, the dry-heat oven is the method of choice for sterilizing needles for reuse.

Handpiece Sterilization. Conventional handpieces may be sterilized either in the autoclave or the dry-heat oven. At the present time, there is no uniform method for sterilizing air-turbine handpieces.

Charbeneau, G. T. & Berry, G. C., JADA 59:732-737, 1959, described a simple and effective autoclave method for all metal dental instruments including the conventional handpiece. To prevent rusting, the instruments are coated before each autoclaving with a protective oil-water emulsion. Injection syringes and needles should not be coated with emulsion because of danger of oil emboli when used for injection.

Modern silicone lubricants make oven sterilization of conventional handpieces appear feasible. The few literature reports on this subject are inconclusive. Further research and testing will be required before a firm policy can be established. There is no question that the oven will sterilize handpieces; the questions are on the adequacy of silicone lubrication in prolonged use, and the unproven safety from topical toxicity. The two silicone products which have been recommended as substitutes for petroleum lubricants of required viscosities are:

Type of Petroleum lubricant	Silicone lubricant. (From FSC Group 91, Fuels, Lubricants, Oils, and Waxes.)
Light machine oil	50 Centistoke "Damping Fluid" FSN 9150-664-0047 - 1 lb. can
Petrolatum (grease)	Grease, aircraft and instrument FSN 9150-272-3370 - 2 ounce tube.

The "damping fluid" listed above is of the Dow Corning 200 series, whose freedom from topical toxicity has been well established. (Crowe, F.W., JAMA 149:1464, 1952.) (Barondes, R. et al, J Mil Surg 106:378, 1950.) The aircraft and instrument grease listed above is a mixture of Dow Corning 200 series silicone fluid jelled with lithium stearate soap. Although there are no known published reports of toxicity tests, this grease has been widely used for years and no dermatitis has been reported. On these premises, the above described silicone lubricants are probably acceptable for handpiece lubrication associated with oven sterilization.

When oven sterilization is adopted as standard procedure, the handpiece is sterilized after each patient. The following cleansing routine is recommended. Each time water has entered the handpiece, or in any case, after it has been used six times, the handpiece is completely dismantled, thoroughly cleansed with a solvent, dried, relubricated with silicones, wiped with a clean cloth to remove excess lubricant, reassembled and oven sterilized for 1 1/2 hours at 175°C. This prolonged heating period is dictated by the metal

mass of handpieces. After cooling, it is ready for use. Acceptable solvents for the two silicones described above are: amyl acetate, benzene, ethyl ether, gasoline, kerosene, methylene chloride, naphtha or toluene.

Concerning air-turbine handpieces, there is no single sterilizing or germicidal method applicable to all models. Therefore, the dental officer should adopt the most effective procedure within the manufacturer's directions. For those air-turbine handpieces which will tolerate it, the autoclave or oven should be used. For others, it will be necessary to use the germicidal oils, etc. recommended by the manufacturer, and to wipe the external surfaces with ethyl alcohol soaked sponges--after each use and again before use on a new patient.

The use to which a handpiece is to be put should be considered in relation to sterilization requirements. Oral Surgery requires a sterile handpiece. The needs of clinical operative dentistry often dictate use of disinfection procedures. The Naval Dental School's Oral Surgery Department has successfully used autoclaved Densco air-turbine handpieces for over a year with no evident damage to the instrument. After each use, the handpiece is completely disassembled, cleansed, lubricated with petroleum lubricants, aluminum foil wrapped (loosely to permit steam circulation), autoclaved and vacuum dried. Obviously this procedure is justified in cases where tissue may be deeply invaded. Alternatively, in clinical operative and prosthetic procedures wherein the handpiece is used almost constantly, some air-turbine models would be likely to break down as a result of frequent autoclave sterilization; and since tissues are not deeply invaded, chemical disinfection should suffice.

Ethylene oxide sterilization offers much promise toward handpiece sterilization (Wachtel, L. W. & Armstrong, L. M. USN Med. News Letter 43(4):22, Feb. 21, 1964). Unfortunately, this system will require more research, development, test and evaluation before an ethylene oxide sterilizer can be standardized for fleet and field use.

Disinfection. Chemical disinfectants have a distinct place in dental practice. As a whole, they are incapable of killing spore formers and the more resistant vegetative pathogens such as the tubercle bacillus and the hepatitis viruses. The Council on Dental Therapeutics of the American Dental Association recognized these and other limitations. It stipulates that chemical disinfectants must be effective in killing vegetative pathogens with the possible exception of M. tuberculosis within five minutes to be acceptable for dental practice. However, the Council recommends a minimum exposure of 15 to 30 minutes to provide a margin of safety. Chemical disinfectants have poor penetration of organic materials; they are not acceptable for penetration of hinged or deeply grooved instruments; they are not acceptable for use on instruments which are to enter tissue or contact the patient's bloodstream.

Although a variety of chemical disinfectants are available, other than the special disinfectant oils for high speed handpieces, only two are recommended for Dental Corps use: 70 percent ethyl alcohol and quaternary ammonium compounds. In common practice, chemical germicides are used as holding

solutions for sterilized articles. Such holding solutions may readily be contaminated with pathogens through careless handling; if this is to be used, the container should be covered, and special sterile tongs should be provided. Far more preferably, sterilized articles should be stored dry in the container in which they were sterilized.

It is well established that the effectiveness of chemical disinfectants is reduced by organic contamination and dilution. Quaternary ammonium compounds degrade with age. A fresh supply should be provided at least once a day; none should be held overnight.

Anesthetic carpules require especial consideration, since it is known that prolonged submergence will permit infusion by chemical disinfectants. Immersion for 15 to 30 minutes is considered acceptable. Only 70 percent ethyl alcohol may be used. —Dental Division, BUMED

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Personnel and Professional Notes

Preventive Dentistry Program Successful at NavHosp Pensacola. CDR H. S. Samuels, DC USN, Chief of Dental Service, U. S. Naval Hospital, Pensacola, Fla., has announced the details of a successful preventive dentistry program. Launched in August 1963, under the direction of LCDR M. S. Burch, DC USN, the program includes bedside oral hygiene care for ward patients.

Current SnF_2 prophylaxis techniques are supplemented by regularly scheduled slide-lecture demonstrations throughout the hospital by a dental officer/technician team. A battery-powered toothbrush has been made available to ward corpsmen, who provide normal oral hygiene care for debilitated patients.

Personnel are continuously reminded of proper oral hygiene by regular dissemination of information through the plan-of-the-day, pertinent hand-outs, etc. The common denominator of a successful preventive dentistry program seems to be a constant, vigorous approach.

Dental Facility Established in Alaska for Personnel in Remote Areas. Facilities have been provided for dental treatment aboard the U. S. Naval Communications Station, Clam Lagoon, Alaska. In the past, Navy personnel spent many man-hours traveling to keep dental appointments at U. S. Naval Station, Adak, Alaska. Through the efforts of many people, including CAPT R. B. Haynes, DC USN, Dental Officer of the Naval Station, Adak, this new dental facility was established nine months to the day following the initial request.

New Dental Teaching Films. A new series of educational films has been developed by the U. S. Naval Dental School. These are black and white sound films transferred from videotapes used in the Dental School's teaching program. The films cover subjects of current interest in dental practice and are well

suited for use by study and discussion groups. The following films, which comprise the initial series, are available on loan to dental activities of the military services, to dental societies, and to teaching institutions.

1800-59 Prevention of Dental Caries--16 mm. ; black & white; sound; 15 minutes. Reviews the factors responsible for dental caries and illustrates characteristics of the lesion in its early stages. Film includes recommendations for practical application of preventive techniques.

1800-60 How Partial Dentures Affect Abutment Teeth--16 mm. ; black & white; sound; 15 minutes. Illustrates how forces are exerted on abutment teeth by partial dentures and shows a suggested denture design that will control these forces.

1800-61 Wounds of the Face--16 mm. ; black & white; sound; 15 minutes. Discusses early diagnosis and illustrates the basic techniques in treatment of oral and facial wounds.

1800-62 Modern Cavity Preparation--16 mm. ; black & white; sound; 15 minutes. Demonstrates the changes in cavity preparation incident to the advent of the air-turbine. The concepts included are the rubber dam, washed-field technique, instrumentation, and newly designed burs.

1800-63 Correct Pontic Design--16 mm. ; black & white; sound; 15 minutes. Reviews and illustrates the requirements and design of pontics for successful fixed partial dentures.

Requests for videotape transfer films should be directed to: Commanding Officer (Code E3), U. S. Naval Dental School, National Naval Medical Center, Bethesda, Maryland 20014.

Dental Research Officer Participates in Oral Science Seminar. CAPT Fred L. Losee, DC USN, presented some of the aspects of the Caries Immune Program being conducted at the Naval Training Center, Great Lakes, before the Oral Science Seminar on 21 May 1964. The seminar, sponsored by the Department of Nutrition and Food Science, Massachusetts Institute of Technology, Boston, Massachusetts, was attended by dental students of Harvard and Tufts Universities, and the staff of the Department of Nutrition and Food Science of MIT and their post-doctorate trainees.

CAPT Losee is Dental Research Officer, Dental Research Facility, USNTPC, Great Lakes, Illinois.

Master Chief Bloom Transferred to Fleet Reserve. Master Chief Dental Technician Ralph Bloom transferred to the Fleet Reserve on 28 May 1964. He has served the past five years at the Bureau of Medicine and Surgery in the Dental Technician Section of the Personnel Branch of the Dental Division.

His successor at the Bureau is Master Chief Dental Technician Vernon R. Burke who, prior to this assignment, served as Personnel Records Supervisor for the Naval Dental School, Bethesda, Maryland.

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PREVENTIVE MEDICINE

Tuberculosis Control Program

Tuberculosis becomes epidemic most often when an active spreader of virulent tuberculosis organisms is in confined quarters such as a ship. Yet our most effective tool in following contacts of an active case is blunted by sheer lack of concern or awareness on the part of medical officers and medical department representatives.

In a recent spot check on Health Records in the Southeastern United States, the Inspector General (Medical) found only 44% of health records reviewed had the tuberculin status of the individual recorded. In recent years every Navy and Marine Corps recruit has been skin tested in boot camp (since 1956 in the case of Navy recruits) and annual health record verifications should have caught the records of the more senior men not tested in boot camp.

Surveys by numerous investigators and United States Public Health Service studies have clearly demonstrated the value of skin test studies of all known contacts of cases of active tuberculosis. The economy of the method and yield of new cases make skin testing an effective tool for tuberculosis control in small closely associated groups such as naval units.

Multiple puncture tests such as the Tine test for tuberculin skin testing are not recommended. The Mantoux technique (article 15-91, MMD) utilizing purified protein derivative of tuberculin is necessary to insure comparability of results with tests in previous years and in the serial tests prescribed in the basic instruction on contact investigation.

A recent survey of tuberculosis cases reported to BUMED during the first six months of 1963 revealed a number of discrepancies in the execution of BUMED INST 6224.1B. Particular neglect has occurred in regard to paragraph 4c(4) which requires summary reports of the status of the control investigation. The following is typical of current observance: 88 cases of pulmonary tuberculosis were reported; only 57 contact investigations had been done; only 34 contact studies submitted summary reports.

Present tuberculosis control instructions are undergoing revision with the primary intent of decreasing paper work in the field and obtaining more meaningful reports in BUMED. The summary reports mentioned above will still be required—such a summary should be less than a page in length and show the number of persons studied, the number of persons transferred since initial testing, the number of negatives, the number of positives, the number of converters (on whom Isoniazid prophylaxis reports are required) and the

name of the index case.

Medical department representatives and medical officers are reminded that the U. S. Navy Preventive Medicine Unit No. 2 in Norfolk, Virginia, No. 5 in San Diego, California, No. 6 in Pearl Harbor, Hawaii and No. 7 in Naples, Italy are available with advice and materials for testing.

—Tuberculosis Control Sec, PrevMed Division, BuMed

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Military Entomology Information Service

The Military Entomology Information Service, a scientific communication service of the Armed Forces Pest Control Board, located at the Forest Glen Section, Walter Reed Army Medical Center, has been in operation for over a year. It is manned by Medical Service Corps entomologists from the Army, Navy and Air Force.

This specialized information center, quite similar in concept to centers operated for other scientific disciplines, has the primary objective of rendering communication service to the individual scientist. More specifically, the service has the following objectives:

a. To assemble available information on arthropods and other pests which may affect military operations in selected geographical areas, with particular emphasis on disease vectors.

b. To organize information relating to military entomology and to provide for its storage and retrieval.

c. Respond to requests for specific information from military entomologists, technical services, preventive medicine laboratories and units, epidemiological flights and laboratories, disease vector control centers, Armed Forces research activities, and related government offices. The system is not designed to readily respond to general demands.

d. Periodically distribute new accessions, or bibliographic citations of selected accessions, to military entomologists whose specific fields of interest are made known to the Armed Forces Pest Control Board.

The system adopted by the service employs an optical coincidence, inverted file system for input, storage, and retrieval, coordinated with an electronic semi-automatic writing-coding unit and an electrostatic reproduction center. These components comprise what is popularly recognized as an "Integrated Data Processing System".

The output of the Service is entirely scientific—no administrative recommendations or procedural policies are intended in any response. The Service responds directly to the requestor, or to the chain of command through which the request was received.

Requests for information should be addressed to the Officer-in-Charge, Military Entomology Information System, Armed Forces Pest Control Board, Forest Glen Section, Walter Reed Army Medical Center, Washington, D.C. 20012.



DID YOU KNOW:

That in 1963, 3,933 laboratory confirmed cases of rabies were reported in the United States?

This is more than 200 cases over the number reported in 1962, or 3,727. This difference is due to a general increase in bat rabies cases and to an epidemic of rabies in raccoons in the Southeast. Other shifts in the epidemiologic pattern of rabies in the United States include extension of the already large epidemic of skunk rabies in the central part of the country, the emergence of epidemic fox rabies in New England, and an increased concentration of dog rabies cases along the United States-Mexico border. As in the previous two years, rabies cases in wildlife have increased while the number in domestic animals remains constant. (1)

That Ethiopia officially declared itself free of yellow fever on 10 Mar 1964?

This is the first time Ethiopia has declared itself free of this disease since the International Sanitary Regulations of the World Health Organization were adopted by the Fourth World Health Assembly in 1951. (2)

That U. S. Patent No. 3,120,796 describes a method and apparatus for protecting the ventilation systems of vessels?

The ventilating systems of vessels are protected against airborne contamination damage resulting from atomic, bacteriological and chemical attacks. (3)

That the "Current Pest Control Recommendations" were revised in December 1963?

The Technical Information Memorandum No. 6 is distributed to provide information for the professional personnel of the military services who are responsible for direction, supervision or guidance of pest control operations. (4)

That during 1963, 7 cases of tetanus with 5 deaths were reported from the State of Virginia?

Ages were 6 days, 5, 11, 50, 51, 83 and 90 years each. The 6-day old infant, born at home of an unimmunized mother, presented with an umbilical infection and clinical tetanus, died shortly after hospital admission. In the other 6 cases, the wounds were so minor that medical attention was not sought.

Tetanus probably would not have resulted if tetanus toxoid immunization had been a past experience. As of 11 April 1964, 2 cases of tetanus have occurred. A 48-year old woman presented the complaint that a splinter had stuck in her foot while walking barefoot in her home. During this visit a splinter was not demonstrated; however, an injection of tetanus antitoxin was given. Five days later, cellulitis was apparent, a splinter was recovered and antibiotics were started. Subsequently, difficulty in swallowing and muscle stiffness were noted. She did not respond to therapy, including tetanus antitoxin and expired 9 days after the splinter had been removed. The second case occurred in a 48-year old carpenter who stuck a nail superficially in his hand one week prior to onset of symptoms. The wound was not treated and apparently healed. He was seen in the hospital emergency room with "stiffness of neck, locked jaws; the head was drawn back and the abdomen was rigid." On admittance to the hospital, tetanus antitoxin was given, but he expired the following day. (5)

Bibliography:

1. CDC Veterinary Publ. Hlth. Notes, April 1964.
2. USDHEW PHS WKLY Morbidity & Mortality Rpt, Vol 13(14): 124, 10 April 1964.
3. National Academy of Science, NRC Prevention of Deterioration Center (PDC) Newsletter, Vol VII (3): 4, April 1964.
4. National Academy of Science, NRC Prevention of Deterioration Center (PDC) Newsletter, Vol VII (3): 4, April 1964.
5. Commonwealth of Virginia Dept of Health, Bureau of Epidemiology, Morbidity Report, 11 April 1964.

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New Test for Diagnosing Sporotrichosis

USDHEW PHS CDC, Vet Pub Hlth Notes, May 1964.

Dr. William Kaplan of the Mycology and Parasitology Section, Laboratory Branch, Communicable Disease Center, working in cooperation with Dr. Antonio Gonzalez Ochoa of the Mexican National Institute of Tropical Diseases, has developed a new, rapid method of diagnosing sporotrichosis through the use of the fluorescent antibody technique. The accuracy of this test compares favorably with that of other tests and can be completed in 2 hours.

A study was conducted to compare the efficacy of the fluorescent antibody procedure with that of conventional culture procedures. Using the FA technique, Sporotrichum schenckii was demonstrated in 89 percent of patients found positive with the culture test, including 1 case found negative by the culture test. This FA identification was confirmed later by skin test.

Isolation of the fungus by culture is considered the best procedure, but requires a week or more for results. A skin test requires 48 hours, and the results are essentially presumptive in nature.

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Ultraviolet Closed Circuit TV Microscopy

The application of ultraviolet-sensitive TV camera tubes to medical and biological microscopy problems has been attempted several times during the past decade. Several years ago, a short note in Nature (192, p. 1060, Dec. 16, 1961) discussed some of the work being done in the United Kingdom on the use of ultraviolet light for studies of live cells. In that note, preliminary data were given on an experimental ultraviolet-sensitive vidicon being developed by EMI Ltd. Due to the potential applications of this tube, which has now been placed on the market, some of its characteristics will be summarized here.

The arsenic triselenide target layer, deposited on the quartz faceplate, gives a sensitivity of at least 0.1 ua/uwcm^{-2} in the ultraviolet region down to 2500 \AA . The peak sensitivity is 0.2 ua/uwcm^{-2} at 4000 \AA and less than $0.01 \text{ ua/uwcm}^{-2}$ for wave lengths greater than 6000 \AA . The unity gamma over most of the useful range of operation allows the wave-form to be used to give a direct measure of absorption of the observed object. A separate mesh electrode results in excellent overall resolution over a 1 cm^2 scanned area.

This new microscope should be of great interest to cytologists. Professor R. Barer (Univ. of Sheffield) has pointed out in the above reference that magnifications of 3000 times could be obtained, focusing is not a problem, relatively thick specimens can be investigated and a large number of fields may be scanned in a rather short time. Probably one of the most interesting applications will be quantitative cytochemical studies using the refractive index and absorption of living cells. The possibilities for rapid microspectrophotometry of living matter should open new vistas for the cell physiologist. "Optical dissection" can possibly give us better knowledge of fine structure in organisms not distorted by harsh chemicals or physical stresses.

—G. H. Keitel and J. R. Kingston

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Jimson Weed Poisoning - Tennessee

USPHS DHEW Morb & Mort Wkly Rpt., 13(15): 125-127, 10 Apr 1964.

An unusual outbreak of stramonium food poisoning related to jimson weed consumption was reported from Hawkins County, Tennessee. Five persons in all became ill between 5 minutes and 5 hours after consuming tomatoes which contained the alkaloid.

Five minutes after eating, 2 adults became acutely ill at the luncheon table with visual hallucinations, disorientation, generalized weakness, blurred vision, pronounced thirst, vertigo and nausea. They were hospitalized immediately. On physical examination, both had dilated, sluggishly reactive pupils. Within 5 hours of this meal, the other 3 sharing it had become ill with similar, but milder, symptoms.

The meal had consisted of fresh, sliced tomatoes, split pea soup, spaghetti, sweet milk, and cornbread. Both the split pea soup and the spaghetti had been served 2 days earlier; they had been reheated for this meal.

One individual had consumed 3-1/2 slices of tomato and 4 others had eaten 1 slice each of fresh tomato. Commercially canned tomatoes were used in the spaghetti.

The Division of Preventable Diseases, Tennessee State Health Department, noted that the tomatoes served at the meal had been "grown with jimson weed." Immediate examination of the State Toxicology files yielded a description of jimson weed poisoning, the toxic principal being the alkaloids stramonium, hyoscyamine, scopolamine, and atropine. Certain that jimson weed explained their symptoms, this information was telephoned immediately to their physicians.

The tomato consumed at the meal was obtained from a tomato plant grafted to the root of a jimson weed (Datura stramonium). This had been done in an attempt to produce a larger tomato, more resistant to cold.

Case Number 1 had become familiar with this grafting procedure through a neighbor (not a victim). This neighbor had attempted tomato grafting with several plants for 5 years, but had been successful only with the jimson weed. He had only occasionally tasted tomatoes from these plants. He never experienced ill effects.

The tomato consumed at the above meal was the first to be eaten from Case Number 1's plants. Following this incident, it was learned that Case Number 1's grafts were made with an above-ground secondary branch of the jimson weed, whereas the neighbor had always grafted the stalks to the roots below ground.

Tennessee health authorities conclude that this modification in technique may have accounted for the toxicity of Case Number 1's tomatoes.

One whole tomato was retrieved from Case Number 1's home and forwarded to the Tennessee Industrial Hygiene Laboratory. This was produced by the same grafting technique but did not come from the same plant that yielded the tomato consumed at the above meal. Three tomatoes were also obtained from the neighbor's home (grown by grafts made to the root stalks).

Case Number 1's tomato yielded 4.2 milligrams of stramonium alkaloids per 100 grams of tomato; the neighbor's tomatoes yielded 1.9 milligrams per 100 grams.

The tested tomato would contain about 1.0 milligrams of total alkaloid per slice, according to calculations from the laboratory results; since the ingested tomato was not analyzed, direct comparison of dosage and symptom-

atology was not possible.

Numerous case reports of jimson weed poisoning have appeared in the medical literature; yet there is no available report of the stramonium alkaloids being transferred to a second plant grafted to the host jimson weed.

The jimson weed (Datura stramonium), also known as thorn apple, Jamestown weed, stink weed, devil's apple, and apple of Peru, is a species of the Solanacea family to which the red pepper, tobacco, tomato, and belladonna plants belong. The plant is prevalent in this country and in all temperate and tropical zones, flowering in late spring and with the fruit ripening in early fall. All parts of the plant are poisonous, especially the seeds. It is a malodorous, tall, branched plant which attains a height of 3 to 6 feet with trumpet-shaped flowers and spinous capsule which contains numerous black-brown seeds.¹

The plant grows wild around barn yards, manure piles, and road slides, and is readily available to the sampling of inquisitive children. Mitchell² reported that between 1950 and 1955, jimson weed intoxication accounted for 4% of pediatric patients admitted to the University of Virginia hospital because of the accidental ingestion of toxic substances. In this hospital this was approximately the same frequency as intoxications due to lead, alcohol, barbiturates, and insecticides. Most cases result from the plant's use in jimson weed tea, reported to be an effective treatment for asthma and other respiratory ailments.

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Medical Practitioners and Preventive Medicine

WHO Chronicle 18(5): 177-179, May 1964.

"The unique characteristic of preventive medicine is its relevance to every specialty of medical practice and to the work of the medical practitioner."

"The prevention of disease, however, requires more than skills and techniques for it is the bed-rock of medicine itself."¹

It might be thought that the preventive aspects of medicine are so obvious that no effort is needed to convince medical practitioners of their importance. In the developed countries the major health problems nowadays include the cardiovascular diseases, cancer, mental disorders, and the special problems of

urbanization such as accidents and drug addiction, as well, perhaps, as juvenile delinquency. Most, if not all, of these conditions carry with them important social and economic implications; and, with the increasing cost of treatment, no country can afford to rely only on attempts to cure them. In the developing countries, too—and this is a point that is not so readily appreciated—the same problems will shortly have to be faced, for what sets their diseases apart from those of developed countries is less a difference of pattern than a difference of time.

In the developing countries the problems of health and disease are so great that medical practitioners must necessarily interest themselves to some extent in prevention. The acute infections; contamination of water, food, and soil by human excreta, with resulting infection and infestation; insect-borne and other vector-borne diseases; poor housing; poverty; illiteracy; malnutrition; and deeply rooted customs, habits, and beliefs: these compel physicians to play a multiple role, treating disease, acting perhaps as health officers and administrators, perhaps undertaking research into the health conditions of the area where they practice.

A WHO Expert Committee on Professional and Technical Education of Medical and Auxiliary Personnel states in its report¹ just issued, on the promotion of medical practitioners' interest in preventive medicine: "It is imperative that the medical profession should accept the preventive idea wholeheartedly and that this should become part of its basic way of thought. Already the amount of preventive work undertaken is considerable. We are, in fact, dealing with a new and advancing frontier."

If the medical practitioner in the developing country is in the position that he can scarcely avoid having to deal with the prevention of disease, his professional colleagues in the developed countries may never give prevention more than a passing thought. Receiving their medical education in universities or medical schools where the whole emphasis is on the curative aspects of disease, they go into hospitals for postgraduate training and then into practice where they spend their entire time in treating sick patients. The amount of time in the medical curriculum devoted to public health and prevention is small in comparison with that devoted to internal medicine or surgery; the status of the subject is correspondingly low; and since the greatest part of the clinical years is spent in hospitals where the preventive aspects of disease play a very small part medical students not unnaturally tend as a body to view medicine as preponderantly curative. Yet there is no doubt that by the use of preventive techniques the medical practitioner can serve his patients more effectively, enlarge the scope and interest of his practice, contribute appreciably to community health, and complement the work of the specialized hospital and public health services.

Undergraduate Teaching of Preventive Medicine. The Expert Committee

1. World Hlth Org. Techn Rep. Ser., 1964, 269.

suggests three main ways of improving the teaching of preventive medicine to medical students: first, a substantial amount of preventive medicine should be included in the undergraduate curriculum for all departments; secondly, its teaching should be organized largely through professorial departments of preventive medicine; and thirdly, special attention should be paid to the status of the subject, which is reflected in such things as the quality and number of the teaching staff, salaries, equipment, research facilities, the amount of teaching time devoted to preventive medicine, and the importance assigned to it in examinations.

The teachers of all the pre-clinical and clinical subjects must be able to deal with the preventive aspects of their particular specialties; in addition, it is essential to have a professorial department of preventive medicine in each medical school, not only to promote the status of the subject but also to link up the other departments in the school. The department could also offer statistical, epidemiological, and other services, and act as a bridge between the teaching hospital and the community.

As preventive medicine is not a separate subject but an aspect of each of the other medical subjects, it should be taught at all stages of the curriculum. It is particularly important to ensure that the student will not lose interest in preventive medicine during the clinical years.

The emphasis given to the different branches of preventive medicine in the curriculum will of course vary according to the needs. Developing countries will be preoccupied with the mass diseases, hygiene, environmental control, and problems of nutrition. With the growth of industrialization there will be more emphasis on the organization and administration of health and welfare services, while in the more developed countries prominence will be given to the diseases of urban and industrial life and the health problems of aging populations.

The traditional public health subjects offer, of course, the best opportunities for teaching preventive medicine. To these should be added: the epidemiology of diseases, injuries and disabilities; medical statistics; medical aspects of sociology, social psychology, and anthropology; elementary genetics; economic aspects of medical care; and the organization of health and welfare services. In addition, certain subjects may require special emphasis: these include industrial medicine, housing, the control of radiation hazards, drug addiction, problems of adolescence and delinquency, and the use of health indices. The essentials of communication techniques should also be taught, with particular reference to health education.

The teaching and learning of preventive medicine should be an active process, the seminar being preferable to the lecture as a teaching method. Ideally, the subject should be taught in the community itself. Work in the homes of patients should serve to counteract to some extent the traditional emphasis on the hospital "case". Demonstrations of the different ways of organizing community health services are of particular importance. The student should have the opportunity of working in a general practice or health

center with practitioners familiar with preventive techniques. Textbooks should give the prevention of disease an equal place with causation, diagnosis, prognosis, treatment, and rehabilitation, and there should be special textbooks on preventive medicine.

Interesting the Practitioner in Preventive Work. If the practice of preventive medicine is to be encouraged, the general practitioner must have the wholehearted support of the medical schools, the medical associations, and the health authorities. The community should provide, as far as its resources permit, for the postgraduate education of the general practitioner in this field. Such education should be carried out by means of short courses and demonstrations—for example, on presymptomatic screening for chronic diseases, genetic counselling, and the rehabilitation of the disabled—relating preventive ideas to the day-to-day practice of medicine.

Above all, inertia and resistance on the part of the practitioner must be overcome. He must be convinced that it is as useful and intellectually satisfying to prevent disease and disability from occurring as to treat and correct it when it exists. Ways of interesting him in preventive medicine include: assigning him an active role in immunization and other campaigns, arranging exchanges and visits to areas where effective preventive work is being carried out, providing him with manuals and guides, encouraging him to take part in teaching and research, and promoting a public demand for more preventive services.

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Measles

USDHEW PHS Wkly Morb & Mort Rpt, 13(12): 93-101, 27 Mar 1964.

A nationwide epidemic of Rubella (German measles) has been in progress throughout the country. A rise in reported cases was first noted late in the Fall 1963, in the northeast United States. The outbreak has spread rapidly to the south and west. With the exception of Minnesota, all States have noted a marked rise in reported Rubella cases. Increases were observed in January 1964, in the Mid-Atlantic and East North Central areas, and in February 1964, in the South Atlantic, East South Central, West South Central, and Mountain areas. Laboratory identification of the etiologic agent in specimens from typical cases has been accomplished in New York City, Philadelphia, and Cleveland; in other areas, the diagnosis has been made on the basis of clinical characteristics of the illness.

Several States optionally report Rubella cases on an annual basis to the Communicable Disease Center, Public Health Service, U. S. Department of Health, Education and Welfare, Atlanta, Georgia. The similarity of the patterns observed in the various geographic areas to that seen for the nation as a whole is of interest. The Pacific States (Washington and Oregon) demon-

strate a curve similar in shape to that observed in other areas, but with an apparent one-year shift to the right.

The clinical characteristics of the disease now occurring have varied within the spectrum of signs and symptoms classically described for Rubella. The rash most frequently described is maculopapular, beginning first on the face and neck, with rapid progression to trunk, arms, hands, legs, and feet. Cervical, occipital, and postauricular lymphadenopathy has been a prominent feature in reported cases; while most patients have experienced mild fever, the maximum level has not been impressive. In some areas, arthralgia resembling that of rheumatoid arthritis has been noted. The disease lasts 3-7 days and has been symptomatically mild. Most of the victims are children of school age, but cases have also occurred among preschool children as well as adults. Prophylaxis with gamma globulin has been used widely in the first trimester of pregnancy.

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RESERVE



SECTION

American Psychological Association

The Annual Meeting of the American Psychological Association will be held at Los Angeles, California during the period 4-9 September 1964. A Military Symposium in conjunction with the meeting will be held on 4, 5, 6, 7, 8, and 9 September. Each session will be at least two hours in duration.

By authority of the Chief of Naval Personnel, one retirement point may be credited to eligible Naval Reserve Medical Service Corps (Psychology) officers in attendance. Officers are requested to register with the Commandant's Representative in order that attendance may be recorded and reported.

American Board Certifications

This Bureau has been notified by the American Board of Internal Medicine that the following Reserve Officers have been certified:

LT Chester Alan Alper MC, USNR	614526/2105
LT Axel W. Anderson, III, MC, USNR	618840/2105
LCDR Charles H. Banov, MC, USNR	582224/2105
LT Thomas J. Bellezza, MC, USNR	565542/2105
LCDR Meriwether C. Blaydes MC, USNR	611336/2105
LCDR Irwin M. Bogarad MC, USNR	610199/2105

LT Donald Louis Bucy MC, USNR	625524/2105
LCDR Wallace F. Buttrick MC, USNR	483442/2105
LCDR James F. Casey MC, USNR	613211/2105
LTJG Solon L. Coleman III MC, USNR	554423/2105
LCDR Norris R. Dougherty MC, USNR	575911/2105
LT Barry Jay Fenton MC, USNR	623968/2105
LT William S. Fletcher MC, USNR	541750/2105
LCDR "J" Clark Ford MC, USNR	606087/2105
LT Edwin G. Graves, Jr., MC, USNR	611250/2105
LT Matthew L. Greenberg MC, USNR	620309/2105
LCDR Joseph H. Hardison, Jr., MC, USNR	616837/2105
LCDR John Burkett Hill, MC, USNR	623142/2105
LCDR William D. Hoadley MC, USNR	614489/2105
LCDR Lee Hoffman MC, USNR	618111/2105
LT Edwin H. Hopton MC, USNR	617187/2105
LCDR Paul K. Jones MC, USNR	606196/2105
LT James F. Leary MC, USNR	594941/2105
LCDR John Milton Lewis MC, USNR	607022/2105
LCDR Lonnie Clifford McKee Jr., MC, USNR	625410/2105
LCDR Jess P. Miller MC, USNR	623519/2105
LT Peter W. Morris MC, USNR	617941/2105
LT Marvous E. Mostellar MC, USNR	605660/2105
LCDR Paul M. Nonkin MC, USNR	589101/2105
LCDR Maurice A. Pearl MC, USNR	613362/2105
LT Walter Puckett III MC, USNR	613076/2105

How Much Do You Know About The Selected
Reserve? - Continued

The Commander, Naval Reserve Training Command, with headquarters in Omaha, Nebr., oversees the training of more than 94,000 Selected Reservists, working through the naval district commandants. The Chief of Naval Air Reserve Training, headquartered at NAS Glenview, Ill., supervises the training of Selected Air Reservists.

There are more than 300 Naval Reserve Training Centers and Training Facilities and 140 Electronics Facilities established in major population centers. Air Reserve squadrons are based at 18 Naval Air Stations and NARTUs throughout the country.

Some training centers are located near available pier space where training ships and submarines can be moored, thereby making dockside training readily available. There are 35 Naval Reserve Training Ships including patrol craft and 23 immobilized submarines, in addition to the 40 destroyer-type ships and 12 mine-craft. The patrol craft are, for the most part, located in the Great Lakes.

The Naval Reserve's mobilization needs must be measured in terms of

ships, aircraft and trained and qualified personnel. The present strength in drill pay status in the Selected Reserve, both Surface and Air is above 127,000; it is steadily increasing. The authorized strength is 126,000 in drill pay status.

Just how effective is our Selected Reserve? What is being done to improve it? Here are a few quotations, taken from a speech given a few months ago by RADM F.J. Becton, USN, Commander Naval Reserve Training Command: "Just as we need a powerful Navy to protect our sea lanes, so also do we need a strong Naval Reserve, trained and ready to reinforce it in an emergency. Our ASW ships will augment Hunter-Killer groups in the event of mobilization. During the past year, we have made significant progress in a number of areas...." In August 1962, our 40 DDs and DEs of our ASW Component returned following the Berlin recall and resumed their former status as Reserve training ships. At the end of August of that year, we had in the Reserve Crews less than 1000 enlisted men. Since that date, this figure has risen to almost 4000. We have made steady progress in attaining our goal of full on-board strength.

"ASW conferences held in San Diego and Norfolk have been highly successful in pointing up problem areas and offering realistic solutions. Similar conferences for Mine Warfare and Ship Activation, Maintenance and Repair personnel were held in Norfolk and Long Beach. Through these conferences, where we discuss mutual problems, we are promoting much greater interest in the various Reserve programs involving our NRT ships.

(To be continued)

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